

ABSTRACT OF THE DISCLOSURE

An electric field activated bi-stable molecular system configured within an electric field generated by a pair of electrodes is provided for use, e.g., as electronic ink or other visual displays. The molecular system has at least one rotor portion connected to at least one stator portion, wherein the rotor portion rotates with respect to the stator portion between at least two different states upon application of the electric field, thereby inducing a band gap change in the molecular system, wherein in a first state, there is extended conjugation throughout the major portion of the molecular system, resulting in a relatively smaller band gap, and wherein in a second state, the extended conjugation is destroyed, resulting in a relatively larger band gap. A primary advantage of the molecular system is improved contrast. Because the colorant of the present invention is molecular and thus effectively monoplanar, there should be no backside reflection or scattering from the colorant. A second advantage of the present invention is improved resolution. Finally, each molecule of the present invention will latch to stabilize one or the other of its color states.

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